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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,233	07/25/2002	Jinliang Qiao	U 013868-3	9932

140 7590 09/06/2006

LADAS & PARRY
26 WEST 61ST STREET
NEW YORK, NY 10023

EXAMINER

FEELY, MICHAEL J

ART UNIT PAPER NUMBER

1712

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/049,233

Applicant(s)

QIAO ET AL.

Examiner

Michael J. Feely

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,7,9,10,12,14,16 and 18-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,7,9,10,12,14,16 and 18-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>20060619</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Pending Claims

Claims 1, 6, 7, 9, 10, 12, 14, 16 and 18-24 are pending.

Previous Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. The rejection of claims 1, 6, 7, 9, 10, 12, 14, 16 and 18-24 under 35 U.S.C. 103(a) as being unpatentable over Coran et al. (US Pat. No. 5,889,119) stands for the reasons of record.

Regarding claims 1, 6, 7, 18-21, and 23, Coran et al. disclose: (1) a fully vulcanized thermoplastic elastomer comprising a rubber phase and a plastic matrix (Abstract; column 3, lines 21-64), wherein an average particle size of the rubber phase of said fully vulcanized thermoplastic elastomer is *preferably less than about 2 μ* (column 3, lines 21-64); wherein the

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weight ratio of rubber phase to plastic is 30:70 to 75:25 (column 3, lines 21-32); and wherein the rubber phase is at least one of *see claim for list* (column 6, lines 5-17);

(6) wherein said rubber has a gel content of at least 60% by weight (column 3, lines 54-64: *inherent of "ground pre-vulcanized particles"*), (21) wherein said rubber has a gel content of at least 75% by weight (column 3, lines 54-64: *inherent of "ground pre-vulcanized particles"*);

(7) wherein the plastic matrix is at least one of *see claim for list* (column 4, line 62 through column 5, line 2);

(18) a method of preparing a molded article with the vulcanized thermoplastic elastomer of claim 1 (column 8, lines 3-8);

(19) wherein the average particle size of the rubber phase is *preferably less than about* 2μ (column 3, lines 21-64);

(20) wherein the weight ratio of rubber phase to the plastic matrix is 50:50 to 75:25 (column 3, lines 21-32); and

(23) wherein the fully vulcanized thermoplastic elastomer is prepared by a process comprising the steps of: (i) providing a fully vulcanized powdery rubber (column 3, lines 54-64), and (ii) blending the fully vulcanized powdery rubber with a plastic, wherein a weight ratio of the fully vulcanized powder rubber to the plastic is 30:70 to 75:25 (column 3, lines 21-64).

Coran et al. do not explicitly disclose: (1) wherein the shape of the fully vulcanized (*powdery*) rubber is spheroidic; however, this appears to be an inherent feature of the ground/powdered rubber particles. It should be noted that *spheroidic* does not require an actual spherical shape. A spheroid is shaped *like* a sphere *but is not perfectly round*. Any "particle" that is characterized by particle size (diameter) is inherently *spheroidic* to some degree. Even if

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these “particles” were deformed or irregular in shape, they would inherently resemble a sphere to some extent.

Therefore, if not explicitly taught by Coran et al, then the ground/powdered rubber particles of Coran et al. would have been inherently spheroidic to some degree.

Coran et al. also fail to explicitly disclose: *(1)* wherein the average particle size of the rubber phase is $0.05\mu \sim 0.5\mu$; and *(19)* wherein the average particle size of the rubber phase is $0.05\mu \sim 0.2\mu$. Rather, they disclose, “Where the binder rubber is vulcanized or crosslinked, the crosslinked binder rubber should have a number average diameter of less than 50μ , preferably less than 25μ , more preferably less than 10μ , even more preferably less than 5μ , and still more preferably less than 2μ ,” (column 3, lines 54-61). This most preferable range is an open-ended range that encompasses the claimed ranges.

In light of this, it has been found that, “[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness,” – See *MPEP 2144.05*. Furthermore, Applicant fails to show criticality for these claimed ranges.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to select an average particle size of the rubber phase of $0.05\mu \sim 0.5\mu$ or $0.05\mu \sim 0.2\mu$ in the composition of Coran et al. because Coran et al. disclose a range of *preferably less than 2μ* , which encompasses the somewhat narrower claimed ranges.

Regarding claims 9, 10, 12, 14, 16, 22, and 24, Coran et al. disclose: *(9)* a process for preparing a fully vulcanized thermoplastic elastomer (Abstract; column 3, lines 21-64), which

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comprises the steps of (i) providing a fully vulcanized powdery rubber as a first starting material (column 3, lines 54-64), and (ii) blending the fully vulcanized powdery rubber with plastic as a second starting material, wherein the weight ratio of the fully vulcanized powdery rubber to the plastic is 30:70 to 75:25 (column 3, lines 21-64); wherein said fully vulcanized powdery rubber comprises at least one rubber selected from the group consisting of *see claim for list* (column 6, lines 5-17); and wherein the average particle size of the fully vulcanized powdery rubber is *preferably less than about 2 μ* (column 3, lines 21-64);

(10) wherein the weight ratio of the fully vulcanized powdery rubber to plastic is 50:50 to 75:25 (column 3, lines 21-32);

(14 & 22) wherein the average particle size of the fully vulcanized powdery rubber is *preferably less than about 2 μ* (column 3, lines 21-64);

(16) wherein said plastic comprises at least one polymer or copolymer thereof selected from the group consisting of *see claim for list* (column 4, line 62 through column 5, line 2); and

(24) wherein the first starting material consists essentially of the fully vulcanized powdery rubber (column 3, lines 21-64) and the second starting material consists essentially of the plastic (column 3, lines 21-64).

Coran et al. do not explicitly disclose: (12) wherein the shape of the fully vulcanized powdery rubber is spheroidic; however, this appears to be an inherent feature of the ground/powdered rubber particles. It should be noted that *spheroidic* does not require an actual spherical shape. A spheroid is shaped *like* a sphere *but is not perfectly round*. Any “particle” that is characterized by particle size (diameter) is inherently *spheroidic* to some degree. Even if

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these “particles” were deformed or irregular in shape, they would inherently resemble a sphere to some extent.

Therefore, if not explicitly taught by Coran et al, then the ground/powdered rubber particles of Coran et al. would have been inherently spheroidic to some degree.

Coran et al. also fail to explicitly disclose: (9) wherein the average particle size of the fully vulcanized powdery rubber is $0.02\mu \sim 1\mu$; (14) wherein the average particle size of the fully vulcanized powdery rubber is $0.05\mu \sim 0.5\mu$; and (19) wherein the average particle size of the fully vulcanized powdery rubber is $0.05\mu \sim 0.2\mu$. Rather, they disclose, “Where the binder rubber is vulcanized or crosslinked, the crosslinked binder rubber should have a number average diameter of less than 50μ , preferably less than 25μ , more preferably less than 10μ , even more preferably less than 5μ , and still more preferably less than 2μ ,” (column 3, lines 54-61). This most preferable range is an open-ended range that encompasses the claimed ranges.

In light of this, it has been found that, “[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness,” – See MPEP 2144.05. Furthermore, Applicant fails to show criticality for these claimed ranges.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to select an average particle size of the rubber phase of $0.02\mu \sim 1\mu$, $0.05\mu \sim 0.5\mu$ or $0.05\mu \sim 0.2\mu$ in the composition of Coran et al. because Coran et al. disclose a range of *preferably less than 2μ* , which encompasses the somewhat narrower claimed ranges.

Response to Arguments

4. Applicant's arguments filed June 19, 2006 have been fully considered but they are not persuasive.

Applicants argue that the dynamic vulcanization process disclosed by Coran et al. would not be able to produce a thermoplastic elastomer containing elastomer particles (only) in the 1-2 μ range. They contend that the prior art is not enabled to produce such a composition. Furthermore, they contend that Coran et al. do not include a step of providing a fully vulcanized powdery rubber as a first starting material.

Applicant should take note that Coran et al. disclose: "Although dynamic vulcanization is the preferred process for obtaining the binder, it should be appreciated that other methods can be used to prepare the binder. For example, the rubber can be *fully vulcanized in the absence of the crystalline polyolefin resin, powdered, and mixed with the polyolefin resin at a temperature above the melting or softening point of the polyolefin resin...* As those skilled in the art would appreciate, crosslinked binder rubber that is dispersed within at resin, and which has a number average diameter of less than about 2 μ are typically achieved by using dynamic vulcanization techniques. *Although the addition of prevulcanized particles ground to appropriate size is contemplated,*" (column 3, lines 49-64).

This disclosure demonstrates that Coran et al. do indeed include a step of providing a fully vulcanized powdery rubber as a first starting material. Furthermore, this disclosure demonstrates that these prevulcanized particles can be appropriately granulated to any of their disclosed particle size ranges. These ranges would include their preferred range of less than about 2 μ .

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For these reasons, Applicants' arguments are not persuasive.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

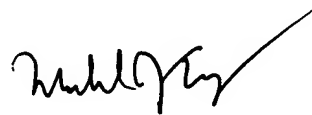
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Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael J. Feely
Primary Examiner
Art Unit 1712

September 4, 2006

**MICHAEL FEELY
PRIMARY EXAMINER**